

Joint Transportation Committee
Air Cargo Movement Study
Stakeholder Panel
April 9, 2018
Olympia Cherburg Building | Conference Room ABC
11:00 am – 3:00 pm

Attendance:

Josh Brown, Puget Sound Regional Council
Sheri Call, Washington Trucking Association
Dave Catterson, Joint Transportation
Committee
Bruce Chandler, Representative
Maralyn Chase, Senator
Judy Clibborn, Representative
P.J. Cranmer, Commodity Forwarders Inc.
Tom Dent, Representative
Jon Devaney, Washington Tree Fruit Association
Jake Fey, Representative
David Fleckenstein, WSDOT Aviation
Tom Green, Sea-Tac Airport
Spencer Hansen, FedEx
Mark Hargrove, Representative
Steve Hobbs, Senator
Karen Keiser, Senator

Marko Lilas, Senator
Rich Mueller, Port of Moses Lake
Ed Orcutt, Representative
Tina Orwall, Representative
Beth Redfield, Joint Transportation Committee
James Thompson, Washington Ports Association
Judy Warnick, Senator
Mark Witsoe, Boeing Field

Consultant Team:

Joe Bryan, WSP
David Williams, WSP
Tom Phillips, Kaiser Phillips Associates
Rita Brogan, PRR
Diana Barreto, PRR

Welcome and Introductions:

Senator Steve Hobbs opened the meeting. Senator Hobbs referenced the importance of the study, citing the Seattle to Paris route that recently opened because of the high demand from the business sector. Representative Judy Clibborn expressed she is looking forward to seeing the impact of this study.

Rita Brogan led the group in a round of introductions and reviewed the agenda topics: air cargo forecast, industry perspectives, regional market capture, inventory of facilities, future facility needs, air cargo congestion, state interest in addressing air cargo needs, and next steps. Tom Phillips followed, providing a status report on project elements.

Air Cargo Forecast

Tom Phillips explained the Air Cargo Forecast is designed to answer the following questions:

- What is the 10-year growth that needs to be accommodated at the state's air cargo airports?
- What trends underlie the forecast?
- What other forecasts were considered?

Tom Phillips shared three airports generate most air cargo in Washington State: Seattle-Tacoma International (Sea-Tac), King County International/Boeing Field, and Spokane International airports. Non-hub and small commercial passenger airports within the state account for 4% of the total air cargo volumes moved in Washington in 2016. Washington has slightly increased its market share of cargo from around 2.6 to 2.9 percent of the national air cargo market.

Tom reviewed the graphs that illustrate the five-year change (2006, 2011, 2016) between the three main airports that generate cargo activity. He explained the Snohomish County Airport growth is due mainly to the assembly of the Boeing 787, and it was on the graph to show the relative scale to other airports. The graph shows that Sea-Tac is driving most air cargo in the state. Snohomish County Airport greatly outpaces many airports in Washington but doesn't compare with the three main airports.

Tom continued the trends during the last ten years show that air cargo dropped during economic crisis of 2008--2009. There's been a gradual resurgence of cargo since then. Tom highlighted there was more cargo tonnage at Sea-Tac in 2000 compared to today. Sea-Tac is currently at 93% of its peak cargo tonnage. This change in the cargo market can be attributed to the following factors:

1. Cargo used to be domestic, and wide-body aircraft used to be more common flying from city to city. This trend has gone away and shifted cargo into trucks.
2. Trucking plays a significant role in air cargo – every air cargo trip begins with a truck and ends with a truck. The truck has become more competitive, and almost all domestic cargo other than express cargo (which flies on FedEx, DHL, and UPS) goes in a truck.
3. Most of the growth in cargo now is in international cargo.

King County International has grown through their express cargo. Sea-Tac has grown mainly due to international passenger wide-body service, since they've been able to manage more belly cargo to go along with freighter cargo.

Globally, air cargo traffic averaged 5% growth per year between 1985 and 2015. The growth rate exceeded 6% in several years throughout the 1980s, 1990s, and early 2000s. Growth slowed as fuel prices began to rise in 2005 and many shippers began to divert freight to truck or ocean modes of transport. The global economic downturn of 2008-2009 dragged down all modes of freight transport.

With the exception of 2010, when businesses began to replenish inventories after the economic downturn, cargo remained weak until 2015. This growth corresponds with growth of e-commerce, pharmaceuticals, perishables, and ongoing rise in global manufacturing export orders. Air cargo grew by 9-10% in 2017, the strongest calendar year of growth since 2010. Tom described growth as "booming."

Tom added there are a variety of external factors that affect industry growth, such as population growth, gains in the economy, and growth in international trade. Other factors include:

- Shipping tariffs on other modes of transportation
- Changing inventory management techniques
- Deregulation
- Liberalization of trade
- National development programs
- Stream of air-eligible commodities

Inversely, there are Inhibitors to growth such as:

- Sustained economic downturns
- Domestic and international security directives
- Modal shift from air to other modes (truck and ocean)
 - This has had a big impact on air cargo prior to 2000
- Downsizing of passenger aircraft fleet
- Fuel volatility
- Trade barriers and increased operating regulations
- Change in consumption habits and manufacturing techniques
- Political instability

Typically, more change in freight volumes at individual airports comes from the exit or entrance of an airline to an airport.

Tom explained the team developed the Washington state forecast for this study. Sea-Tac, King County International and Spokane international demonstrated strong growth. Sea-Tac lead with 4.4% compound annual growth rate (CAGR).

The team examined different markets and trends:

- Boeing predicts world air cargo traffic will grow 4.2% per year over the next 20 years.
- Airbus forecasts air cargo will grow 4% per year over the next 20 years.
- The FAA's new forecast is a bit more aggressive:
 - Domestic cargo increase at an average annual rate of 1.3% 2016-2037.
 - International cargo increase at an average of 3.8% a year.
- The International Air Transport Association (IATA) predicts volumes will rise 4.5% in 2018.

Overall the industry air cargo growth predictions point to more international growth.

The project team developed the SEA forecast on several key factors and assumptions.

- The increase in wide-body international passenger service lead to a significant increase in international air cargo volumes.
- In 2016, SEA began to see significant growth in freighter activity by airlines focused on e-commerce. While this may seem correlated to the growth of Amazon, it's hard to classify since Amazon moves their cargo for their own purposes while FedEx is going from supplier to door.
- A growing freight market was also part of the key factors for the SEA forecast.
- It is expected that the integrator/express airlines will maintain a 50% market share at SEA over the forecast period. The integrator/express market at SEA is predicted to grow at compound annual growth rate of 7% for years 2018 and 2019, with growth moderating in the medium and long term as the market matures. International air cargo market will grow at a compound annual growth rate of 3% until 2029. Air cargo other than integrator/express and international will grow at a steady rate of 2% per year.

Tom reviewed the two business models: integrator and express. An example of an express model would be FedEx where the service goes from shipper to consignee. This is customer service focused and FedEx

is in control of the whole process. Service for traditional, or integrator carriers, is more from airport to airport, functioning like a freight forwarder.

The project team compared forecasts made through the Sea-Tac Airport Master Plan, the Boeing World Forecast, and historical data. This forecast timeframe is 2004-2040. The forecasts were reviewed for Sea-Tac International, King County International, and Spokane International airports. Forecasts predict Sea-Tac will have high growth, moderating over the medium- and long-term as markets mature. For King County International Airport, projections assume UPS will dominate the air cargo market, and continue to do so as the e-commerce market expands. Projections for Spokane International are informed by the assumptions that it will continue to be the PNW transshipment hub and integrator/express carriers will retain their 97% market share going forward. UPS grows about 3% per year.

Industry Perspectives

The project team interviewed freight forwarders to answer these questions:

- What are industry perceptions of air cargo facilities and services in Washington State?
- Do they have concerns about crowding at Sea-Tac?
- What factors are considerations in utilizing other airports around the state?

According to international airlines interviewed, Sea-Tac is a good place to do business and most find the facilities and services to be more than adequate. Growth of air cargo, limited ground-handling space, and constrained layout lead to congestion and delays. Concerns include:

- Significant wait times for trucks accessing the terminal.
- Delays in handling goods, particularly for airlines that do not handle their own cargo.
- Lack of TSA screening resources on the airport.

Several stakeholders noted similar constraints exist at other airports around the world and more efficient layout and additional off-airport facilities could resolve many of these problems.

Tom noted the primary congestion issue at SeaTac is seasonal as the on-airport facilities are not sized for the cherry season. An overall indication of not just facility congestion but service congestion is evident as well. Even things like available dog teams factor into this. But mostly the delay is due to trucking and being able to get the cargo on time due to lay-out and security issues.

Freight forwarders expressed multiple opinions about using facilities at other airports. Some were open to it, but many were unfamiliar about the facilities and services. Tom said freight forwarders make the decisions about where to take their business. Their understanding and support for any alternative air cargo services and locations will be critical to its success.

Tom mentioned almost every airport in the U.S. has congestion. He also discussed the impact freight forwarders have on air cargo growth, noting when freight forwarders are unfamiliar with airports, they are less likely to want to fly to them. He explained freight forwarders don't have many people on the ground at different airports and might not know the processes at each airport. Tom gave an example about services that were available at Moses Lake that would greatly benefit a freight forwarder, but because they were unfamiliar with the Moses Lake airport, the freight forwarder never used the services.

Ed Orcutt asked if cargo shifts to boats when airports are congested. Tom Phillips answered cost is the most likely factor to cause a mode shift. Ed asked if there was a percentage of air cargo that needed to go by air. Tom responded one hundred percent of the cargo that travels by air needs to go by air because the price difference is so great. Tom added no one would pay for air cargo if it wasn't necessary because the price comparison is nine cents by ground for every five to six dollars by air.

Karen Keiser asked why freight forwarders choose one airport over another. Tom explained freight forwarders make money by buying wholesale space and selling at retail price. He continued freight forwarders consider the number of destinations and type of aircraft at airports.

Regional Market Capture

Joe Bryan began reviewing key questions:

- What goods are imported and exported from Washington airports?
- What are the origins and destinations?
- Are there opportunities to capture more goods made or used in Washington through Washington airports?

Joe explained the reasoning behind accounting for goods imported and exported from Washington's airports.

- Imported goods may go through Washington airports and then later may go through the airports in other states.
- Some of the cargo Washington airports handle may come in through other states. We may be handling some of the good and sending some elsewhere.

Joe stated that if WA airports are putting out more goods than the State of Washington sends out by air then we are bringing in more goods and traffic from somewhere else. And the reverse is also true – if the State of Washington is putting out more goods than the airports send out, then we must be sending that overflow some place. This presents an opportunity.

Sea-Tac is one of the United States' principal gateways for international air cargo from East Asia. It serves Washington and a broader regional market (mostly Oregon, Idaho and some parts of California) for international trade. The team examined international airports and then analyzed factors commodity by commodity.

Joe began by highlighting Washington and Sea-Tac exports, particularly those concentrated in perishable foods.

- Fresh cherries and seafood together represented over a quarter of the airport's air cargo exports (by volume) in 2016, destined almost entirely to East Asian countries.
- A large share of cherry exports, however, appear to be handled by out-of-state airports, including Vancouver, BC. Joe showed a graph representing the metric ton(s) of fresh cherries being exported is greater than those exported by Washington state, demonstrating other modes or airports are handling excess capacity.

Exports of seafood are balanced; meaning that WA is putting out about as much as the airports sending out in cargo. Washington is a significant gateway to East Asia for footwear parts. Sneakers get built with

parts from many different places. Trade wars get complicated quickly because of the way Americans build products. Few products are built in-house 100%. The United States distributes manufacturing worldwide.

Joe also noted Sea-Tac is a significant gateway to East Asia for electronic integrated circuits, and machines and apparatus for manufacturing semiconductors. For these commodities, the airport serves a much larger market than the state.

Sea-Tac also acts as a smaller gateway port to Europe for computers and machines, and apparatus for manufacturing semiconductors. In addition, Sea-Tac also handles significant exports to Europe for: instruments; civilian aircraft and engines, and parts, TV receivers and monitors; metals and metal products. For these commodities, Sea-Tac's volumes are less than Washington state exports, showing the role of competing airports. Chicago O'Hare and Los Angeles International likely receive overflow exports to Europe.

Joe reviewed a graph showing import data from world regions. Compared to world regional data, Washington and its airports do well, sometimes performing better than the national totals. He pointed out that some goods come in from South America to Los Angeles rather than the Pacific Northwest.

For many product categories, Sea-Tac outperforms other regional airports. Data show Sea-Tac likely services a much larger geographic area, such as Oregon and farther away. Sea-Tac lags in cargo compared to Washington State imports in the following areas:

- Electric Apparatus for Line Telephony, Parts
- Transmission Apparatus for Radiotelephone; TV Cameras and Recorders
- Automatic Data Processing Machines; Magnetic Readers, etc.

Joe continued Washington state is bringing in almost 8,000 tons of technology products, and state airports are handling a small percentage of it. Los Angeles and San Francisco are bringing the rest and trucking it to Washington.

Sea-Tac also acts as a gateway port for selected products from Europe, including: salmon, aircraft seats and seat parts and pipes and tanks. Washington is bringing in more pipes and tanks from Europe than Washington airports can handle. Washington airports are importing more of these commodities from East Asia, and we are sending them elsewhere.

1. Washington is a principle gateway for East Asia import and exports. Sea-Tac is the principal international trade airport for the Pacific Northwest, and it defends its territory well.
2. There are certain types of goods Washington is not handling but could be addressed with flight changes and redirection during cherry season.
3. European imports need to be developed compared to East Asian counterparts, recognizing East Asian imports are larger than European imports.
4. Washington is doing well today but the industry would lose to California if it gained more flights or Washington's costs increase.

A stakeholder asked if freight was priced only by weight. Joe answered pricing is more dimensional, and rate is dependent on weight and cubic capacity of the airport. Tom Phillips added pricing is either by package dimensions or weight – whichever is more expensive.

Another stakeholder asked if comparisons were being made to ocean cargo. Joe answered comparisons between ocean and air cargo are not being made because no one is choosing whether to ship something through air or ocean. He reiterated vendors choose air as a last or only resort due to expense, so there's no real comparison.

A third stakeholder asked why the team hadn't looked at peaches, apples or other perishables as part of this study. Joe answered cherries are the most perishable. PJ Cramner added less than 1% of apples go by air, and peaches do not go by air. PJ also said some asparagus goes by air to Europe and less to Asia.

Other questions asked during this portion of the presentation:

How competitive is the Vancouver BC airport outside of cherry season? Tom answered that Vancouver has no freight service, but they are growing.

How much does Portland International Airport compete with Washington airports? Tom answered that Portland International is not very competitive, noting the difficulty to catch up to the type of momentum that Sea-Tac has. He added a competitive advantage lies with the number of carriers – the more carriers, the better the pricing.

Inventory of Facilities and Future Facility Needs

David Williams began by asking key questions:

- What are the key facility indicators for air cargo?
- What air cargo facilities are available at airports in Washington?

David mentioned he would first review airport facilities and the kinds of capacities airports have. The group reviewed data for 10 airports in the state, their facilities, and their capabilities. The team chose the 10 airports by analyzing the amount of cargo they were currently managing as well as the facilities or air side capabilities available to handle cargo.

The final list of airports is:

- Seattle-Tacoma International (SEA)
- King County International (BFI)
- Spokane International (GEG)
- Bellingham International (BLI)
- Paine Field (PAE)
- Pangborn Memorial (EAT)
- Yakima Air Terminal (YKM)
- Tri-Cities/Pasco (PSC)
- Walla-Walla Municipal (ALW)
- Grant County/Moses Lake (MWH)

The team used the following types of information to assess existing conditions:

- National Plan of Integrated Airport Systems classification
 - Funding through FAA to help support structured airports
- Most frequent all-cargo aircraft

- Design aircraft (this is also FAA terminology that determines size of an airport)
- Runway length
 - Aircraft type specifies runway length
- Approach procedures
- On-site warehouse and support facilities
 - On and off airports
- Air cargo operators
- Port of entry
- Air cargo trends
- Distances to Seattle from the main air cargo area
- Distance to nearest Interstate from the main air cargo area

David discussed the Airport Cooperative Research Board (ACRP)'s tool to understand the capacity for each airport. He noted each operator measures this a little bit differently. However, the (ACRP) has conducted many studies to understand different factors that could make a difference for airports and provide guidance in a more uniform manner. There is currently a guidebook by the ACRP (Report 143) that establishes background and guidance on what airports need for different facilities based on tonnage, type of cargo (integrated or belly), and size of the facilities.

David discussed project status in assessing if air cargo facilities in Washington are sufficient to handle projected demand. He briefly reviewed the methodology used to identify potential deficits for key air cargo airports in the areas of ramp availability, Cargo Building Space, Truck and Auto Parking and Forecast Cargo Traffic, for the years 2017, 2021, and 2026.

He noted Sea-Tac International ranks #17 for air cargo tonnage and 35% of its air freight volume in international. One of its major challenges is that regional roadway corridors are highly congested. David also reviewed an aerial of Sea-Tac airport and said Sea-Tac has room for growth and off-site warehousing. He pointed out the opportunities available to the north, east, and south of Sea-Tac. A desire for growth at Sea-Tac is driving the increasing demand for passenger cargo. When put through the ACRP model, Sea-Tac has a surplus of ramp space. It is also showing a deficit in cargo building space, but off-site buildings could be used to help reduce this deficit. According to the ACRP model, Sea-Tac also has enough truck and passenger vehicle parking to accommodate forecasted growth.

David reviewed an aerial showing the footprint of what the cargo facility was at Sea-Tac and how it's operating today. One of the design options is to condense the size of the air cargo area and make it more efficient. There was also a plan to add cargo development and have cargo on two sides of the airport.

David moved on to review King County International Airport, which is considered a regional hub for UPS and is challenged by roadway congestion and constrained landside limits. This airport has well-developed property with Boeing on one side. Trains on the other side and the freeway is the constraint for additional growth along with roadway congestion.

With the additional growth expected at King County Airport, the ACRP model showed a deficit in ramp space which means that they would have to repurpose property and utilization to accommodate the growth. Interestingly, this airport has a surplus of cargo building space. However, UPS operates as a hub

out of this airport and UPS prefers to do ramp transfers rather than having air cargo building space. The ramp space will continue to be a challenge.

Last of the top three airports for this portion of the presentation, David reviewed the ACRP model for Spokane International. FedEx, UPS, and feeder airlines (all cargo), and Delta and Spokane (belly cargo) serve Spokane International. In addition to its large remote ramps east of RWY 03-21, its South Pilot Ramp is used by cargo aircraft to clear Customs as an alternative port of entry to Seattle. Spokane has a lot of available ramp space and a port of entry that brings in international flights.

Spokane focuses on development of integrated cargo that brings in cargo and then ships out to places like Idaho and Montana. There is also a lot of ramp space available that can also accommodate future growth. Cargo building space shows at a deficit but they do have a plan for when that need arises. Spokane also has space for truck and auto parking as the airport grows.

Paine Field is the next biggest airport (after Spokane) with not much but some cargo activity mostly related to the 747 aircraft. Currently the space can hold up to three 747 and the area can be expanded further south. There is some opportunity for belly cargo in the passenger flights that are already flying in and out of Paine Field. Additional things to plan for here are more ramp space and warehousing.

Grant County has space available to handle airside capacity with the largest size aircraft that might serve the community. Grant County also has FedEx and UPS service, but it is small at the moment (only serving the retail market). There is capacity for more UPS and FedEx activity here. Rail is also nearby and can lead to growth connecting air and rail.

Other airports have runways that can accommodate 737 aircraft and some that can accommodate 747 aircraft. Bellingham has good highway system. Pangborn and Walla Walla do not have great highway access even though they may have capacity for more activity.

Key findings the inventory and facilities needs analysis included:

1. Sea-Tac is accommodating growth through redeveloping their master plan.
2. King County will have to repurpose land to accommodate growth.
3. Spokane has room to accept more cargo. It also has the room to expand their cargo operations.
4. Paine Field has opportunities to expand into belly cargo but it would require a significant investment.
5. Grant County needs more cargo facilities.
6. Other airports have some capacity and availability but are not well suited in the other factors that play into making a site desirable like access to highways, appropriate ramp space and runway size.

Tina Orwall asked how expansion of military operations affect facility growth. David answered military operations were not factored in since this growth is controlled and not significant.

Karen Keiser asked David to define the term “cargo ramp facilities.” David answered this is an umbrella term that includes: space for equipment, parking (storage of trucks), aircraft all quantified by square footage. Tom Phillips also responded saying ramp space needs change depending on the airport and the type of aircraft they manage.

Senator Marko Liias asked if Sea-Tac surplus analysis was based on the Sea-Tac Airport Master Plan or the preferred growth target, which showed more vigorous growth than the master plan. What happens when you apply the higher growth rate? David answered the analysis used their forecasted preferred growth developed by the study team and not the master plan.

A stakeholder panel member asked about how tonnage equates to number of trucks? If every air cargo trip begins and ends with a truck, what is the impact to the connecting roads? Tom Phillips and Joe Bryan answered about eight tractor trailers are needed for each freighter – but not all cargo is in a freighter. You can carry about 15,000 tons (2,000 lb. tons) per truck. They followed up ground impact is coming in a later section.

Spencer Hansen from FedEx provided clarification on cargo area square footage. He said every operation is different. For instance, there is less need for square footage in San Diego than in western Washington where the rain requires more facilities.

Air Cargo Congestion

Joe Bryan led a presentation on air cargo congestion. His findings address the following questions:

- How is congestion defined and measured?
- Are any of the airports in the state congested, and in what ways?
- What are the consequences of air cargo congestion?

The analysis of air cargo congestion considers, airside capacity, landside capacity and access (in and out as well as staging areas) capacity. **Air Cargo Capacity** is defined as the maximum cargo volume that can be handled by airside, landside, and access-system components. Any one of these components can decrease capacity. **Air Cargo Congestion** is by the increase in costs to shippers/operators as cargo volumes approach capacity, stressing one or many system components.

Multiple factors contribute to rising costs:

- Impact of reaching limits, which will happen before 100% capacity.
- Impact due to longer queues
- Impact due to increased unreliability

The Air Cargo Congestion Analysis includes two complementary approaches:

1. **Capacity Analysis:** Inventory airside, landside, and access system components. Identify system weaknesses and use metrics to assess facility utilization. Compare with industry standards and reference airports.
2. **Congestion Delay Analysis:** Analyze FAA's Aviation System Performance Management database to characterize air cargo delay.

Karen Kaiser asked whether landside includes the transportation component since air cargo is not meant to stay at the airport. She continued cargo adds to road congestion.

Joe answered: Landside is the airport facility on the ground, which focuses on access to roadways in and out, and connections to other places.

Joe reviewed 2016 data that compares the average number of outbound flights per week by airport. The chart didn't account for size of the aircraft – only the number of outbound flights per week. This means an airport might have more flights but not necessarily more cargo. Joe also noted frequency of flights is an important factor that will help growth, which will also be more attractive to flight forwarders.

Joe noted that Los Angeles International and San Francisco International offer exceptional belly capacity to Asia and Europe, competing strongly with Washington state airports for these markets. Of the regionally competitive airports, Los Angeles International provides the only direct service to South America. Spokane and Sea-Tac have similar freighter numbers, but the size of the aircraft is a significant difference. Integrators provide most of the cargo capacity in places like Ontario, King County, and Spokane. Ontario is a UPS hub. Oakland is another integrator hub for FedEx. Integrator traffic does go overseas. Joe concluded LAX is bigger, but we are competitive.

Joe reviewed the on-time percentages for Sea-Tac given the airside capacity and flight schedules, measured within 15 minutes of the schedule. The margin is small but carriers build in buffer time into their schedules – meaning, there is already give and take. Sea-Tac is better on departure percentages than LAX and San Francisco. Smaller airports may be stronger on flight schedules, but they are smaller airports. Washington does well with flight schedules, even when considering the amount of flights per week that are departing from Sea-Tac.

A stakeholder asked why Sea-Tac has a better record than Los Angeles International. Joe answered it may have to do with size and increased congestion. Tom Green confirmed that congestion is a major factor affecting timeliness.

Tom Phillips mentioned the six or seven airports around LAX couldn't get people to come to them even though Los Angeles International is very congested because freight forwarders prefer Los Angeles International. Freight forwarders will not move to neighboring Ontario, San Bernardino, Riverside, Victorville. Freight forwarders want access to flights and flights want access to freight forwarders, reinforcing the commitment to Los Angeles International.

Joe Bryan offered the following observations regarding landside capacity:

- Landside capacity may be inadequate to meet the cargo needs at Sea-Tac due to competition with growing passenger requirements.
- Analysis shows that Sea-Tac could begin having a building deficit in 2021.
- If expansion of cargo building capacity is not done on-airport, off-site facilities near the airport or in Kent will be needed.
- Distribution center availability in Kent has tightened, yet air cargo volumes are relatively small compared to regional trucking and distribution.

A stakeholder asked if there was a suggestion to aggregate cargo at off-site facilities and if this meant it would be private sector management where prices would be driven by demand. Joe answered for off airport that is correct; for on airport there is more negotiating.

Joe mentioned the asking price in rent for logistics facilities in the Seattle area had grown the fastest of any place in the world.

Air cargo volumes are small compared to the entire inventory in a distribution center, but it's still important. Also, new designs in our nation are enabling distribution centers with more capacity per acre.

A stakeholder discussed capacity saying it seemed capacity is difficult to calculate because of the broad assumptions used.

David's portion of the presentation with the ACRP analysis is showing a slight surplus at Sea-Tac in 2021 for building facilities and now in the presentation we are showing a slight building deficit in 2012. It seems like picking a year where you might reach a theoretical capacity is difficult (if you did nothing at all to make yourself more competitive). A truer date within the report would be useful. As a function of the master plan Sea-Tac is currently adding capacity. The competition between the growing passenger and cargo requirements are more of a goal to have balanced capacity growth. Sea-Tac doesn't necessarily see competition between passenger and cargo – more of a balanced growth portfolio. This doesn't mean they are looking to achieve a 50/50 split but providing the capacity needed for both within each of their forecasts.

Joe responded this approach was encouraging.

Joe discussed the importance of surrounding Sea-Tac area and other spaces within the airport as opportunities for growth.

Joe explained the new Prologis distribution center in Georgetown is in response to a capacity crunch for distribution centers in Seattle. This is the first multi-story distribution center designed for fulfillment in the country. It is three stories and has full-size truck ramps. It will open later this year and will be five miles from downtown Seattle. It's 590,000 sq. ft. on 9.7 acres, tripling the capacity per acre. This means affordability in a small constrained space not far from downtown with opportunities for tenants. This center can put out three times the amount of freight per day compared to one per acre per day. Older facilities may find that they will be redeveloped. This is a fulfillment center close to downtown to manage companies like Amazon or others wanting to make same-day deliveries.

Joe moved on to talk about road access capacity by reviewing a chart that shows the percentage of days the Seattle to Sea-Tac commute is slower than 36 miles per hour on weekdays with a significant jump between 2014 to 2016. Congestion is getting worse on roads around the airport. WSDOT projects such as the Puget Sound Gateway Program are designed to provide congestion relief around the airport. Congestion is a common problem but it is not good. This congestion influences the environment and the quality of life and it also raises costs.

Joe touched on a question asked earlier about how air cargo volume translates to the surrounding roads. Total forecast for Sea-Tac adds an incremental 190,000 metric tons over ten years, which equates to about 150 trucks per work day. This number is a blend of big 53-foot trucks and smaller box trucks. Joe continued the number is not overwhelming but should be considered.

A stakeholder panel member asked if the congestion measure was just Seattle to Sea-Tac? What about Seattle to Tacoma or other places?

Joe Bryan answered: Correct – the measure was just Seattle to Sea-Tac. In the analysis we presented we are making use of analysis that have been done, rather than undertaking any brand new analysis.

Joe then moved on to a capacity overview of the major cargo airports. He explained the key issues – Washington's largest airports have landside capacity issues and some access capacity issues. He added

airside capacity not an issue. Joe cautioned the capacity issues are not significant but need to be addressed.

Joe presented data demonstrating the economic importance of Washington airports:

- Washington airports handled \$47.6 billion in freight in 2015, compared to state GDP of \$452 billion.
- Air cargo value in the state will more than triple to \$174 billion by 2045, an increase of \$126 billion.
 - While Washington state GDP will not triple by 2045, air cargo will play an important role of the Washington economy.
- The top four commodity groups account for 83% of 2015 freight value, and 86% of the increment through 2045.
 - These are all high-value, technology objects: transportation equipment, Boeing parts, electronic equipment, and precision instruments.
- Air cargo represents an ever-growing share of the Washington's economy, which is already vitally important.

Joe presented a hypothetical scenario describing impacts that might result from Sea-Tac losing air cargo traffic. The project team developed a scenario analysis. If Washington could not manage cargo, goods would be trucked to either Portland or Los Angeles, adding costs -- \$1,600 for Los Angeles and \$230 to Portland.

Judy Warnick asked why the project team hadn't shown the cost of trucking within the state of WA.

Joe Bryan responded saying Washington's major competitors are in California. Unmet cargo demand from Sea-Tac would likely go to airports outside of Washington. He reiterated the goal to have Washington air cargo handled in the Washington air cargo system. The purpose is to keep the competition outside of the state from taking advantage.

Maralyn Chase asked: When you are ranking "other transportation equipment" as a category within the top four commodities of air cargo in Washington airports, have you taken out the volume for Boeing? Joe Bryan answered: Boeing is incorporated in there, and they are not likely to leave. Boeing is a part of a bigger system, some of which could leave. The materials used for building aircraft in Everett won't leave.

Karen Kaiser asked if the study could determine the cost or value added in the event cargo were going other Washington airports.

Another stakeholder panel member asked how current some of the costs estimated are since the team is using a lot of existing analysis.

Joe explained prices have changed as recently as the beginning of this year because of the introduction of electronic log books. This is introducing a constraint which is translating to about a 10% cost increase.

A stakeholder panel member said it would be useful for airports to know not just when cargo arrived on time to the airport but also how often the freight arrives on time at its destination. This is part of the congestion problem that airports want to address.

Joe Bryan responded saying that addressing congestion is part of the next phase of the study along with how the system can work together.

Joe continued the presentation with another hypothetical scenario describing impacts that might result from a 10% shift of demand from Sea-Tac to other airports:

- Truck vehicle-miles-traveled (VMT) would increase in Washington by 520,000 to 740,000 per year, generate significant emissions of pollutants, and increase the accident risk on highways.
- Trucking freight to regionally competitive airports would cost shippers from \$760,000 to \$5 million per year.

Joe emphasized if Washington can't manage it the demand in Washington, having to truck out goods will be costly.

Julie Warnick asked if numbers were included for rail shipping.

Joe Bryan answered the team did not do this analysis because it's rare to have something that goes by air, go by train instead. He continued rail is too slow and too unreliable.

He also presented data that demonstrate the sensitivity of air cargo supply chains to congestions and unreliability:

- High-value supply chains that rely on air cargo place a very high premium on travel times and reliability.
- Shippers value travel time by air 18 times more than travel time by truck.
- Shippers value reliability 142 times more by air than by truck.
- Reliability is the most important reason shippers use air freight service.
- Risks to reliability from air cargo congestion impose a substantial economic penalty.

Shippers by air are buying the timeliness and reliability value. When you're shipping by air you have to have it work reliably and quickly. Congestion makes you less reliable at airports.

Washington needs to prioritize the following issues: roadway congestion, handling facilities, and capacity. Washington's market position is sound but should always anticipate meeting future need. Competitors are formidable outside of the state, and air cargo leaving the state would be costly – meaning, Washington needs to do an excellent job maintaining the system.

Karen Kaiser asked if there was growth plan. She added Washington has finite facilities and wondered how to accommodate growth.

Joe Bryan answered facilities are not finite. Dave's portion of the presentation demonstrated a few of the possibilities. Spokane and Moses Lake are two of many examples of opportunities to manage growth. As e-commerce grows, some of it will go by air, but not all. This will lend itself to some growth. In some of the smaller airports, they haven't been particularly geared toward air cargo. They may not be ready but some could grow significantly from that.

State Transportation Goals and the State Interest in Addressing Air Cargo

Rita Brogan and Joe Bryan led this conversation. Joe Bryan began by reviewing the following question:

- How does air cargo fit into the state's broader interest in transportation?

Joe Bryan also reviewed the categories for WSDOT's state transportation goals:

- Economic Vitality
- Preservation
- Safety
- Mobility
- Environment
- Stewardship

Joe reminded everyone air cargo connects to all of WSDOT's goals but especially to economic vitality. Preservation of the system in our context is broader. Mobility is the interaction between freight, auto and cargo traffic.

Joe reviewed how the air cargo system fits into the State Freight Objectives:

- Maintaining Washington's competitive position as a global gateway to the nation with intermodal freight corridors serving trade and international and interstate commerce, and the state and national Export Initiatives.
 - Interstate commerce is the integrated cargo.
 - Being a strong export state is good for the economy.
- Supporting farm-to-market, manufacturing, and resource industry sectors in rural economies.
 - We do this with supporting cherries and other ways.
- Developing an urban goods movement system that provides goods delivery to residents and businesses, supports jobs, bolsters the economy, and affords clean air for all.

Rita Brogan reviewed the themes emerging from the Stakeholder Advisory Group Committee with regards to economic development, innovation and efficiency, infrastructure, capacity and congestion as well as implementation.

Rita Brogan asked panelists to provide suggestions regarding the state's role in addressing air cargo development. During this portion of the meeting a note taker typed notes on screen so that the stakeholder panel members could review them in real time. Stakeholders provided the following answers:

- Integrate ground transportation air cargo products and service.
- Analyze economic impact of ecommerce on the economy.
 - More than just flying goods – including the importance of what it contributes to revenue.
- Define the kind of infrastructure needed to make sure growth in places like Moses Lake.
- Decentralize and spread air cargo services across the state.
- Measure the impact of growth in different areas.

- As there's growth in Sea-Tac what is the impact to other parts of the state.
- Anticipate the trends going forward with regards to the transportation of products.
 - Trends may not line up with some of the goals – Catalyst v. reactionary.
- How the volume will shift from wide-body aircraft to belly cargo?
- Bring people together in a sort of forum to plan and make decision-makers aware.
 - Need people that will identify the solutions (the private sector).
 - Incentivize what we want to happen.
- Mitigate the impacts of growth (environmental impacts and community impacts).
- Create a forum to be competitive within our boundaries.
 - Bring all the airports into the system to support each other.
 - State level to provide guidance.
 - Commonality in statistics collected.
 - Info to define the system and info to market the system.
 - Policy for zoning (trucks and airplanes).
- Means to evaluate necessary infrastructure for growth ideas.
 - Fully developed infrastructure analysis.
- Agreement on role for the state.
 - Look at other states and provinces' best practices (look beyond U.S.).
- Focus investments on the facilities that the market is choosing to utilize.
- Can bring money to the table with stipulations.
- Defining the system, convening partners (like Gateway Program).

Tom Phillips expressed his support for the suggestion of the State to provide guidance and commonality.

Tom followed up saying it's important to think about an air cargo system instead of a series of independent airports. This may look like each airport having a specific role so that airports are supporting each other not competing with each other. The commonality factor would be a guiding entity. To that end, he also provided the following suggestions:

- Follow New York and Canada's lead to market an airport system
 - Market at the International Air Cargo Forum and Exhibition, held in Toronto this year
- Create streamlined data systems/measurements for all Washington airports.
- Understand the economic benefit of an air cargo system and the airport economy.
 - Airports can be generators for economic development and economic activity in these areas.
 - Make an air cargo community in which you can have stakeholders and airport sponsors working together to sort out problems and look for opportunities to build business at their own airports.
- Look beyond the fence line to develop the services on and off the airport.
 - Airport logistics parks and areas.
 - The state can provide policy guidance for zoning or funding.
- Develop state policy that will encourage logistic service providers to come near airports.
 - Not just beneficial for airports, but also for trucks.
- Have a system which makes cargo movement easier.

- For example – security checks at one airport can streamline processes at another Washington airport is a cargo load is biometrically sealed and accepted at other system airports.

Key Findings

Joe Bryan reviewed the status of the study. He mentioned the study has been laying groundwork. Next the study will look at the opportunities:

- What should the airports around the state do and how can that be supported, what does an overall system look like?

He wrapped up the meeting by reviewing the key findings so far:

- Air cargo in the state is primarily generated at Sea-Tac, Boeing Field, and Spokane International.
- Non-hub and small commercial passenger airports account for less the 5 percent of state volume
- Most of the expansion of air cargo within the state has been driven by the increase in international wide-body aircraft passenger service at Sea-Tac and recent growth in e-commerce related express cargo.
- The growth in e-commerce presents opportunities statewide.
- The forecast air cargo growth rate for Washington state is 3.5 percent compounded annually.
- Sea-Tac is a significant gateway for export and import trade with East Asian countries.
- For most products, Sea-Tac is accommodating Washington state demand but exceptions present opportunities.
- Statewide, airport facilities able to absorb future volume.
- The exception may be Sea-Tac due to the competition between cargo facility and passenger terminal needs on the airport and off-airport congestion and growth.
- Air cargo congestion could create costs for state shippers and impact the environment.

Beth Redfield concluded the meeting by thanking everyone for their attendance and inviting them to the next Stakeholder Panel meeting on June 27 in Moses Lake.